

IN THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 14, with the following rewritten paragraph:

FIG. 4 explains the phenomenon of show-through, and it is assumed that the ~~object~~ objects shown are colored ones. In accordance with wide spread availability of ~~equipments~~ which equipment that can capture or print color images, the use of color images in magazines, catalogues, advertisement, or newspapers ~~have~~ has become common. ~~The examples of equipments which~~ Examples of equipment that can capture color images are color scanners, digital cameras, and digital color copiers. In almost all the cases an image or matter is printed on both ~~the~~ sides of the paper. However, sometimes the image on one side of the paper can be seen even from the other side. This fact is shown in FIG. 4. The image ~~4A~~ 4C is printed on the back side of the paper and the other images are printed on the front side of the paper. However, the image ~~4A~~ 4C printed on the back side of the paper is seen ~~event~~ from the front side. Further, in many cases, a color document has a different background color, or has image patterns, other patterns, and photographs together with one another. Therefore, the problem ~~to remove~~ of removing "show-through" from the input image by performing digital image processing has been regarded as being difficult to handle although it is important for improvement in image quality.

Please replace the paragraph beginning at page 2, line 10, with the following rewritten paragraph:

Methods for removing show-through, ~~on special equipments~~ on special equipment,

such as a book scanner or a double-side scanner, are known. Such methods have been disclosed, for example, in Japanese Patent Nos. HEI 07-87295A, HEI 08-265563A, HEI 09-205544A, HEI 09-233319A, or United States Patent Nos. 5973792 and 5932137.

Please replace the paragraph beginning at page 2, line 16, with the following rewritten paragraph:

~~The~~ U.S. Pat. No. 5,932,137 discloses a method and apparatus. ~~What is disclosed is a~~  
~~technology~~ for mitigating the effects of show-through by scanning ~~the~~ both ~~the~~ sides of the paper and ~~and~~ storing the scanned images. The invention according to this publication is realized by scanning a duplexed document with show-through derived from the second side at least on the first side, storing a first side image and a second side image, generating a representation (mirror-image conversion, registration of images) corresponding to a component attributable to show-through from the second side image to the first side, and correcting (using a show-through coefficient) the image by removing the show-through from the first side as a function of the representation of the second side image. Further, the image processing method for mitigating the effects of show-through is performed by scanning a first side and then a second side of a duplexed document with show-through derived from the second side on the first side, storing the first side image and the second side image, generating a representation (mirror-image conversion, registration of images) corresponding to a component attributable to show-through from the second side image to the first side (and from the first side image to the second side), and correcting (using a show-through coefficient) the image by removing the show-through as a function of the representation of

the second side image (first side image) from the first side (second side). Further, in this publication, there has been described a document printing system which mitigates the effects of show-through for printing an image with mitigated effects of show-through. More specifically, this system comprises a scanner that scans a duplexed document with show-through derived from the second side at least on the first side, and stores images on the first side and the second side, an image processing circuit (mirror-image conversion, registration of images) that generates a representation corresponding to a component attributable to show-through from the second side image to the first side, and an image processing unit (using a show-through coefficient) that removes the show-through from the first side as a function of the representation of the second side image, and corrects the image.

Please replace the paragraph beginning at page 4, line 18, with the following rewritten paragraph:

~~As another~~ Other methods for removing the show-through, ~~there~~ have been proposed ~~methods~~ based on analysis or binarization of image density using only information for a single-side image. For example, the methods have been proposed in Japanese Patent Nos. HEI 11-187266A, HEI 11-41466A, [J. Sauvola, T. Seppanen, S. Haapakoski, and M. Pietikainen, "Adaptive document binarization," Proc. 4th Int. Conf. Document Analysis and Recognition (Ulm, Germany) Aug. 18-20, 1997, pp. 142-146.], U.S. Pat. Nos. 5,646,744 and 5,832,137. However, when the image is complicated, it is difficult to discriminate between a front side image and show-through using density or color distribution. ~~There comes up~~ Using such analyses, a risk arises such that a character having low contrast to a background in

particular, for example, a character in yellow on a white background, may be processed as a show-through image.

Please replace the paragraph beginning at page 5, line 9, with the following rewritten paragraph:

Thus, the method of scanning and storing the images has a problem that it can ~~be~~ only be utilized on special ~~equipments~~ equipment and ~~can not~~ cannot be applied to other ~~equipments~~ equipment. ~~The~~ Such special ~~equipments~~ equipment ~~are the ones that~~ can input and store images on both sides of the paper and can accurately align the positions of both the images.

Please replace the paragraph beginning at page 5, line 15, with the following rewritten paragraph:

On the other hand, the method of using the image density has a problem that it is difficult to discriminate between a front side image and show-through image using density or color distribution when the image is complicated. With this method, there may be a case that a character having low contrast to a background in particular, for example, a character in yellow on a white background is processed as show-through.

Please replace the paragraph beginning at page 25, line 2, with the following rewritten paragraph:

A run R in the vertical direction is extracted in the same manner as the method for

extracting the runs in the horizontal direction. Actually, at steps S72 to S76, S78 and S83, the transposed operations in the horizontal direction and the vertical direction at steps S52 to S56, S58 and S63 are executed. At step S76, if it is determined that no edge exists, a run R of length  $t=s$  in the vertical direction is extracted from the background color image J based on  $(h_0, w_0)$  as a starting point (step S79). However, when there is a pixel as  $F[i][w_0]=1$  ( $h_0 < i < h_0+s$ ), a run R of length  $t=i_0-h_0$  is extracted assuming that  $i_0$  is such a pixel and  $i$  is the minimum.